

In view of the above, it is respectfully requested that the Examiner clarify whether the certified copy of the United Kingdom 9701500.2 priority document has been received by the Examiner.

***Information Disclosure Statement***

Information Disclosure Statements were submitted to the U.S. Patent and Trademark Office on June 7, 1999 and March 1, 2000. In the Examiner's Office Action dated October 10, 2000, the Examiner has not acknowledged receipt of the Information Disclosure Statements. Accordingly, it is respectfully requested that the Examiner initial the PTO-1449 forms attached to the above-mentioned Information Disclosure Statements and forward a copy to Applicants with the next Office Action.

***Rejection Under 35 U.S.C. § 112***

Claims 1-11 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed.

At the outset, it is respectfully pointed out that claims 1-11 have been cancelled without prejudice or disclaimer of the subject matter contained therein and have been replaced by additional claims 12-32. It is also pointed out that additional independent

claims 12, 14, 22 and 32 correspond substantially to cancelled independent claims 1, 2, 6 and 11, respectively.

Applicants respectfully submit that additional claims 12-32 have been carefully revised, taking into consideration the specific deficiencies pointed out by the Examiner. Applicants also submit that additional claims 12-32 are definite and clear in view of the following comments.

With regard to the Examiner's assertion that the phrase "a substance (weight/unit area)" is indefinite, Applicants respectfully submit that this phrase is entirely clear. However, the claims have been amended to remove the parenthesis in order to ensure that the weight/unit area portion of the claim is considered to be a part of the claim.

The "substance" of the mat is a property of the mat defined by the weight/unit area of the mat. The weight/unit area of the mat has been chosen by Applicants to be referred to as the substance of the mat, since there is no known term to refer to the weight/unit area of the mat. Applicants can be there own lexicographers as long as a term used is not repugnant to its ordinary meaning. It should be pointed out that weight/unit area is not equivalent to density as in much of the prior art cited by the Examiner, since the density of the mat varies across its width, generally by the mat being compressed in particular regions. The substance

weight/unit area of such mats remain constant across the mat; however, in the present invention, the substance weight/unit area varies in a cross-direction of the mat. If Applicants were to refer to the density of the mat as the substance of the mat, this would be improper, since the term substance would be repugnant to the ordinary meaning of the term density. In the present case, there is no word for the weight/unit area and therefore the term "substance" can be used to refer to this measurement of a mat.

In view of the above, Applicants respectfully submit that the recitation "a substance weight/unit area" is definite and clear. Furthermore, referring to page 1, last paragraph, the recitation "substance weight/unit area" has support in the present disclosure. In addition, referring to page 5, first full paragraph, it is clear that the substance varies about the cross direction of the mat, since the central substance is referred to as being about  $60 \text{ g/m}^2$  and an edge margin substance is about  $27 \text{ g/m}^2$ . In particular, the substance of the mat is the amount of fibers that are in a given portion of the mat. Accordingly, the amount of material in the center of the material is higher than the amount of material at the edge margins. Applicants have referred to the amount of the material at a given portion of the mat as being the substance at a given portion of the mat that is measured in weight/unit area. Applicants respectfully submit that this recitation is clear in

view of the present specification and therefore the claims are not indefinite under 35 U.S.C. § 112, second paragraph.

With regard to the Examiner's objection of the phrase "edge margins" the Examiner asserts that there is no definition within the specification to indicate what the dimension of an edge margin would be. Applicants respectfully submit that it is not necessary to specify the dimensions of an edge margin and that although the specification and claims do not specify a particular size of margin, the claim is nevertheless clear. The edge margins are merely edge portions of the mat that have a lower substance than a central portion of the mat. The dimension of the edge margins can vary for a particular application. Applicants respectfully submit that one having ordinary skill in the art would readily understand what an edge margin is and therefore the claims are definite and clear as written.

With regard to the Examiner's assertion that the substance varying in the cross direction is unclear since it is not understood how the substance varies, Applicants respectfully submit that in principle, and certainly not in claim 1, there is no restriction on how the substance varies in the cross direction. Applicants respectfully submit that how this occurs is not relevant to the claims. It is clear from the specification that the preferred way of achieving the variation in substance is to have

less of the material of which the mat is composed of in some areas than in others. The Examiner questions whether the composition of the substance changes or if the amount of the substance changes. Although the present specification indicates that it is the amount of the substance that changes, Applicants submit that it may be possible to vary the substance of the mat across its width by varying the composition of the mat as well. However, the present specification is directed to changing the amount of the substance across the width and not the composition of the substance as mentioned by the Examiner. Applicants submit that although the claims may be broad with regard to this issue, they are nevertheless clear.

All that the claims are intended to specify is that the weight/unit area of the map varies across its width. Applicants do not wish to specify in the claims how this is to be achieved, nor should Applicants be required to recite this in additional independent claim 12. In additional claims 14 and 22, the method steps and apparatus features recited in these claims appear to restrict them to techniques in which the substance is varied by the provision of less material in some areas of the mat than in others. Accordingly, additional claims 14 and 22 are clear as well.

The Examiner also objects to the terms "masked" and "blinding plate" which are recited in additional claims 14, 28 and 29. The

term "masked" is a perfectly normal word used in its ordinary manner. Accordingly, Applicants submit that this term is clear. Furthermore, the blinding plate covers the forming wire. The term "blinding plate" is a self-explanatory term of art referring to a plate which performs the function of blinding holes, in this case, the holes in the forming wire. In the present case, the terms "masking" and "blinding" have essentially the same meaning; however, Applicants submit that in the context of the present specification, the claim as a whole can be readily understood. Referring to Figure 1 of the present invention, the blinding plates 22 and 22' are inserted over the mat 18 to prevent the fibers in the slurry from falling through the holes in the forming wire at the location of the blinding plates. Applicants submit that the term "blinding plate" is clear as well. Accordingly, Applicants submit that the claims are definite and clear with regard to these terms. With regard to the Examiner's questioning of whether the forming wire and the blinding plate move independently of each other, Applicants submit that this is how the present invention operates. In the Preferred Embodiment described in the specification, the blinding plates are stationary and the flow box that contains the slurry and the forming wire passes through the flow box and past the blinding plates to collect fibers from the flow box.

The Examiner also objects to the term "remote" in previous claim 4 now claims 18 and 19. Applicants respectfully submit that the Examiner is correct in that the term "remote" is used in its normal way, i.e., "away from." Accordingly, Applicants submit that the term "remote" is clear.

The Examiner also objects to the term "effective width," which now appears in additional claims 20 and 21. The effective width differs from the actual width of the blinding plate in that it refers to the width of the blinding plate which is effective to mask the forming wire, so that the forming wire picks up some fibers from the slurry in the flow box over the edge margins, but of course not as many fibers as would be picked up were the blinding plate not present. The term "effective width" is used because it is possible that the blinding plates could perform their function without any reduction of their actual width along their length, for example by being perforated over part of their length to allow slurry on the forming sheet through the perforations. In that case, the effective width of the blinding plate as a blinding plate would be reduced, although the actual width would remain the same.

The Examiner also objects to the phrase "a forming wire disposed to . . . on the forming wire" which now appears in additional claim 22. Applicants have rewritten this claim to

clarify that the forming wire is disposed to move past the source of slurry, the liquid passing through the forming wire to deposit the inorganic fiber on the forming wire. Applicants submit that this recitation is now definite and clear.

With regard to the Examiner's objection to the phrase "effectiveness of the mask" which now appears in claims 22, 24 and 25, Applicants respectfully submit that the effectiveness of the mask is exactly what is recited. Specifically, the mask is effective in preventing slurry passing through the forming wire and so depositing fibers on the forming wire. Accordingly, this recitation is definite and clear.

With regard to original claim 7, as the Examiner will note, additional claims 24 and 25 now depend from claims 22 and 23, respectively. Since all of these claims are apparatus claims, additional claims 24 and 25 are considered to be definite and clear.

With regard to the Examiner's objection of the term "impinging" which now appears in additional claims 26 and 27, Applicants respectfully submit that this term is used in its ordinary way. If the Examiner would prefer the recitation "impinging on," Applicants submit that this would be acceptable. However, Applicants submit that the term "impinging" itself should be sufficient since it is used in its ordinary way.



With regard to the Examiner's objection to the forming wire having a "face," Applicants submit that a forming wire is a known element in the manufacturing of sheets, such as papermaking. Specifically, a forming wire is a mesh strip, usually continuous, through which slurry passes depositing fibers from the slurry on the forming wire. The forming wire has a width extending across the machine, perpendicular to the running direction of the machine. In the same way in which a sheet of paper has two faces, Applicants submit that the mesh strip or forming wire of the present invention has two faces as well. Additional claims 26 and 27 recite a face of the forming wire which is one side of the forming wire. In view of the above, Applicants submit that this recitation is clear.

With regard to the Examiner's objection of the phrase "cementitious" which is now recited in additional claims 30-32, Applicants submit that the term "cementitious" is a very well known descriptive term which refers to materials similar in nature to cement, in particular, materials which set by a hydration process. Applicants submit that this term is well known in the art and also submit that the use of this term is therefore definite and clear.

With regard to the Examiner's objection of the term "embedded" recited in additional claims 30-32, Applicants submit that embedded in this context means that the mat is under the surface and substantially covered by the cementitious material.

The Examiner also questions how the permeability of the mat varies as now recited in additional claim 32. Applicants submit that this claim is intended to cover any cementitious board having embedded therein inorganic fiber immediately below at least one surface of a mat, the permeability of which varies across the mat. The claim is not intended to specify how this variation in permeability is achieved, but this omission, while undoubtedly rendering this claim broad, does not render it indefinite or unclear.

In view of the above amendments and remarks, Applicants respectfully submit that additional claims 12-32 are definite and clear. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, second paragraph are respectfully requested.

***Rejections Under 35 U.S.C. §§ 102 and 103***

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Timms, U.S. Patent No. 4,415,517. Claims 1-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kajander, U.S. Patent No. 5,462,642. Claims 9-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kajander in view of Prior et al., U.S. Patent No. 4,141,744 and JP 3120013. These rejections are respectfully traversed.

The present invention is directed to a non-woven mat, a method of making a non-woven mat, an apparatus for forming a non-woven mat and a cementitious board having a sheet of a non-woven mat therein. These claims are exemplified by independent claims 12, 14, 22 and 32, respectively. Furthermore, claims 12, 14 and 22 require that the substance weight/unit area varies in the cross direction of the mat. Furthermore, claim 32 requires that the permeability of the mat to cementitious slurry vary across the mat. Applicants respectfully submit that none of the references relied on by the Examiner teach these aspects of the present invention.

In particular, Timms discloses a mat composed of loose glass fibers having a density, rather than a substance weight/unit area, which varies across the mat. The mat of Timms has edges which are denser than the rest of the mat, whereas independent claim 12 of the present application requires that the "substance" of the margins of the mat be lower than the remainder of the mat. Applicants respectfully submit that this reflects the different functions of the variable density mat of Timms from the variable substance map of the present invention. Timms also discloses a method and apparatus in which variation of the density of the glass fiber mat is achieved by compression of particular areas of the mat. Applicants submit that this is clearly different from the masking technique of the present invention. As noted above, the

present invention varies the substance of the mat in the cross direction and not the density of the mat as in the Timms reference.

The purpose of the reduced substance margins of the mat of the present invention is principally to allow cementitious slurry to pass though the edge margins more readily, avoiding the problems discussed in the introduction to the specification of the present application. The increased density margins of the mat of Timms would be expected to hamper the progress of slurry through the margins, thus having precisely the opposite effect to that achieved by the present invention. Applicants submit that since independent claim 1 is now clear in that the substance of the mat and not the density of the mat is varying, it is respectfully submitted that it is now clear that the Timms reference does not anticipate the present claims and also does not render them obvious when read alone or in combination with any other reference.

With regard to Kajander, this reference discloses a method of producing a non-woven fiberglass mat having discrete areas of different construction to each other. These different constructions may be decorative or they may in part improve physical properties. This is achieved by masking areas of the foraminous screen on which the mat is formed which must, it appears, lead to variations in the substance of the mat. However, there is no disclosure that the edges of the mat should be of lower

substance than the remainder of the mat as required by independent claims 12, 14 and 22 or that the permeability vary as required by independent claim 32. The Examiner contends that this is an obvious modification; however, in view of the particular advantage which the mats of the present invention impart to plaster board incorporating them, Applicants respectfully submit that the recitation in the present claims that the edge margins of the mat are of lower substance than the rest of the mat should be sufficient to impart patentability to the claims, since there is absolutely no teaching in any of the references relied on of providing a substance which is lower than the remainder of the material as required by the independent claims of the present invention.

With regard to the Examiner's assertion that the modification of Kajander would be obvious to a person of ordinary skill in the art to mask the edge regions "as an obvious matter of design choice," Applicants respectfully submit that the Examiner has not established a *prima facie* case of obviousness.

A document for Examiner's published by the U.S. Patent and Trademark Office entitled "Formulating And Communicating Rejections Under 35 U.S.C. § 103" states:

The initial burden is on the Examiner to provide some teaching in the prior art of the desirability of doing

what the inventor has done. Thus, an obvious rejection cannot be based solely on the conclusion that certain differences between the closest prior art and the claimed invention are "obvious matters of design choice" or some other equivalent language. It must be explained why the differences would have been recognized as a desirable choice.

A copy of pages 7 and 8 of this document is attached for the Examiner's consideration. Applicants respectfully request that the Examiner reconsider and withdraw the rejection under 35 U.S.C. § 103. Furthermore, Applicants respectfully submit that MPEP § 2142, third paragraph (July 1998) states the following:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion of motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest the claim limitations.

Applicants respectfully submit that the Examiner has failed to meet the burden in establishing a *prima facie* case of obviousness, since the Examiner has not provided any suggestion or motivation to modify the Kajander reference relied on by the Examiner.

With regard to the Prior et al. and JP '013 references, these references have been cited to show that it is known to embed a mat in a cementitious panel. Although it is not at all clear that

Prior et al. does in fact disclose that this is known, it is not Applicants position that embedding mats in cementitious boards is in itself novel. However, Applicants do submit that since the mat of the present invention is novel and inventive, cementitious boards incorporating the inventive mat and so taking advantage of its particular properties are themselves inventive. Accordingly, Applicants submit that the cementitious board of the present invention clearly defines over the references relied on by the Examiner.

In view of the above amendments and remarks, Applicants respectfully submit that claims 12-32 clearly define the present invention over the references relied on by the Examiner. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §§ 102 and 103 are respectfully requested.

#### CONCLUSION

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants respectfully petition for a one (1) month extension of time for filing a response in connection with the present application and the required fee of \$110.00 is attached hereto.

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore

respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn.

It is believed that a full and complete response has been made to the Office Action, and as such, the present application is in condition for allowance.

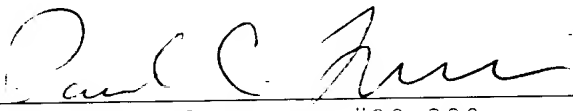
In the event there are any outstanding matters remaining in this application the Examiner is invited to contact Mr. Paul C. Lewis (Reg. No. 43,368) at (703) 205-8000 in the Washington, D.C. area to discuss these matters.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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